Application Serial No: 10/774,644   Attorney Docket No 84816
In reply to Office Action of 29 June 2005

AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions, and

listings, of claims in the application:

Listing of Claims

1. (currently amended) A method for analyzing a sample using ion

mobility spectrometry, the method comprising:

pulsing an ion gate located at one end of a drift tube

during a pre-determined scan time using a temporally

spaced pattern comprising a plurality of ion admitting

periods and a plurality of ion repelling periods, each

ion admitting period representing a distinct length of

time corresponding to a distinct admission frequency;

generating a time dependent mobility spectrum associated

with the sample based upon the voltage induced by a

plurality of sample ions passing into the drift tube

during the admitting periods and striking an ion

detector disposed at a second end of the drift tube

opposite the first end; and

processing the mobility spectrum using wavelet

decomposition to produce a distinct signature

associated with the sample.

2. (Original) The method of claim 1, wherein the sum of all the distinct lengths of time equals about 50% of the pre-determined scan time.

3. (cancelled)

4. (Original) The method of claim 3, further comprising decreasing the length of time associated with each admitting period as the corresponding admission frequency increases.

5. (currently amended) The method of claim 1, wherein the step of processing the mobility spectrum further comprises evaluating the decomposed mobility spectrum using at least one or more statistical evaluators.

6. (Original) The method of claim 5, wherein five statistical evaluators are used.

7. (Original) The method of claim 6, wherein the five statistical evaluators comprise average, standard deviation, maximum, minimum and covariance.

8.   (Original)   The method of claim 1, further comprising comparing the distinct signature associated with the sample to at least one known agent signature to determine if the distinct sample signature matches the known agent signature.

9.   (Original) The method of claim 1, further comprising:

   creating a signature for a known agent;

   training a neural network using the known agent signature;

   using a decision maker to compare the unique signature
      associate with the sample to the known agent signature
      to determine if the distinct sample signature matches
      the known agent signature.

10.   (Original) The method of claim 1, further comprising:

   creating a plurality of signatures for a plurality of known
      agents;

   training a neural network using the known agent
      signatures;

using a decision maker to compare the unique signature

associated with the sample to the known agent

signatures to determine which known agent signature

matches the distinct sample signatures.

11.   (Original) The method of claim 10, wherein the decision

maker is a fuzzy decision maker.

12.   (currently amended) The method of claim 10, wherein the

sample comprises at least a binary mixture and the step of using

the decision maker to compare the unique signature further

comprises identifying <u>at least</u> two ~~or more~~ known agent

signatures matching the distinct sample signature.

13.   (cancelled)

14.   (cancelled)

15.   (cancelled)

16.   (currently amended) An ion mobility spectrometry system

comprising:

a drift tube comprising an accelerating voltage potential

and a counter-current draft gas;

an ion gate disposed at a first end of the drift tube;

an ion gate controller in communication with the ion gate

and arranged to pulse the ion gate during a pre-

determined scan time using a temporally spaced pattern

comprising a plurality of ion admitting periods and a

plurality of ion repelling periods, each ion admitting

period representing a distinct length of time

corresponding to a distinct admission frequency;

an ion detector disposed adjacent a second end of the drift

tube opposite the first end, the detector ~~capable of~~

generating a time dependent mobility spectrum based

upon the voltage induced by a plurality of sample ions

passing into the drift tube during the admitting

periods and striking the ion detector; and

a logic processor in communication with the ion detector to

receive the mobility spectrum, the logic processor

capable of processing the mobility spectrum using a

combination of wavelet decomposition and statistical

evaluators to produce a distinct signature associated

with the sample.

17.   (Original) The system of claim 16, wherein the logic

processor further comprises a neural networked and a fuzzy

decision maker, wherein the neural network has been trained

using a plurality of signatures associated with a plurality of

known agents.

18. (Original) The system of claim 16, wherein the ion gate

controller comprises a transistor-transistor logic level clock

source.